



# HPNS

Hunters Point Naval Shipyard

Department of the Navy  
Base Realignment and Closure (BRAC)

# Understanding Radiation

## What is radiation?

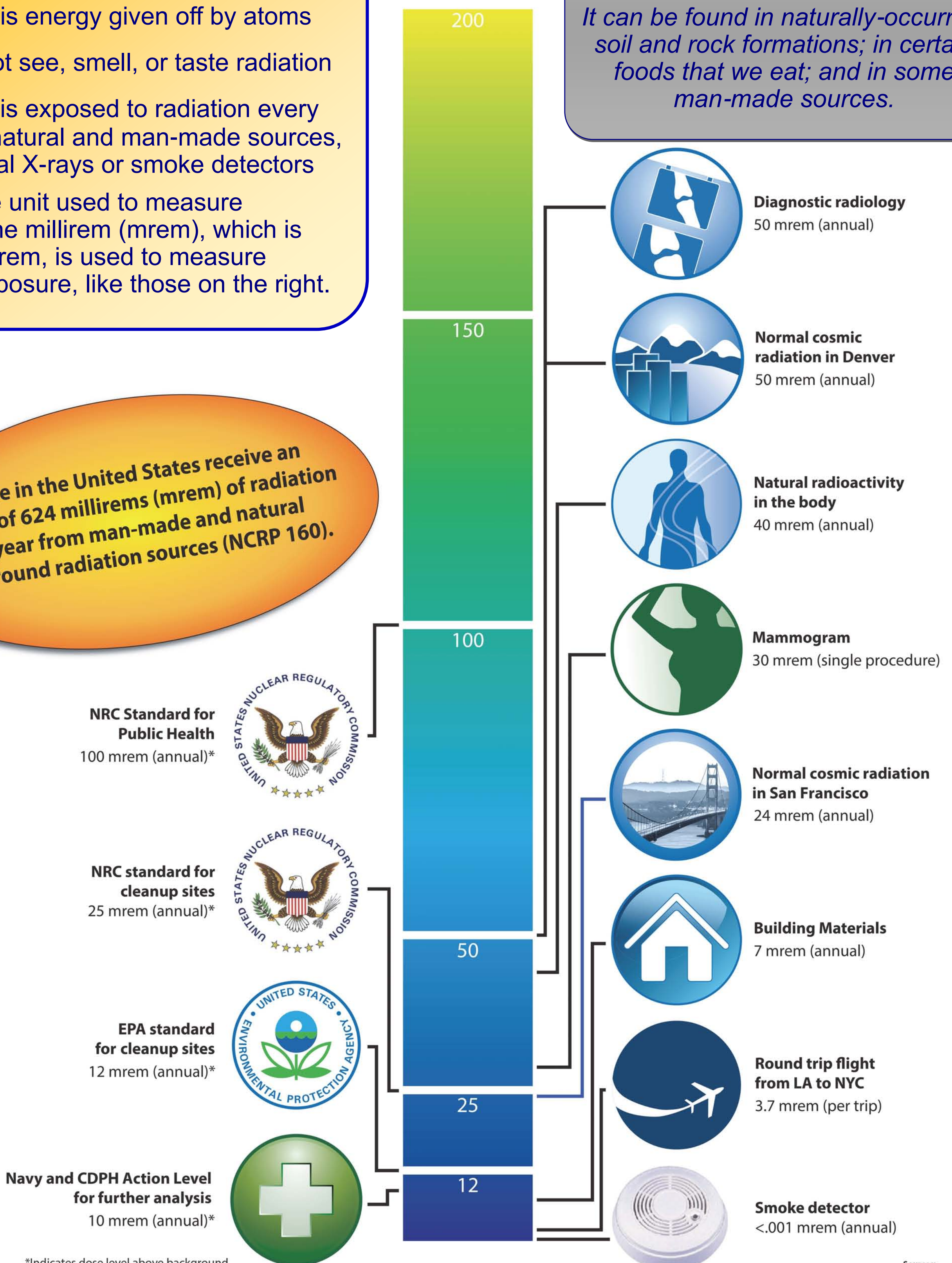
- ◆ Radiation is energy given off by atoms
- ◆ You cannot see, smell, or taste radiation
- ◆ Everyone is exposed to radiation every day from natural and man-made sources, like medical X-rays or smoke detectors

"Rem" is the unit used to measure radiation. The millirem (mrem), which is 1/1000 of a rem, is used to measure common exposure, like those on the right.

People in the United States receive an average of 624 millirems (mrem) of radiation per year from man-made and natural background radiation sources (NCRP 160).

## Radiation is naturally present all around us.

*It can be found in naturally-occurring soil and rock formations; in certain foods that we eat; and in some man-made sources.*



\*Indicates dose level above background

Sources:  
[www.ncrponline.org/Publications/Press\\_Releases/160press.html](http://www.ncrponline.org/Publications/Press_Releases/160press.html),  
[www.epa.gov/radiation/docs/cleanup/rad\\_arar.pdf](http://www.epa.gov/radiation/docs/cleanup/rad_arar.pdf), [isis-online.org/risk/tab7](http://isis-online.org/risk/tab7),  
[www.epa.gov/radtown](http://www.epa.gov/radtown) and [lowdose.energy.gov](http://lowdose.energy.gov).

Sources of radiological exposure are referenced for perspective only and do not address acceptability of risk.





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# Radiation Sources and Locations

Hunters Point Naval Shipyard (HPNS) provided critical ship maintenance to the United States Pacific Fleet during both World War I and World War II. Services included ship repair, maintenance, decontamination, and disposal of low-level radioactive equipment, which included items like radioluminescent (glow-in-the-dark) deck markers, dials, or gauges.

In addition, the Naval Radiological Defense Laboratory (NRDL) conducted research at HPNS on the effects of radiation from 1948 to 1969. The NRDL's mission was to study the potential hazards of radiation and develop ways to prevent or minimize its harmful effects.

## Historical Sources of Radiation

- ◆ Radium was added to paint to cause items to glow-in-the dark; it accounts for more than 99% of the radiological contamination found at HPNS
- ◆ Strontium and cesium were contaminants removed from ships used in atomic weapons tests, and also used by NRDL in research at HPNS
- ◆ Strontium and radium were used in radioluminescent (glow-in-the-dark) deck markers

## Navy Takes Action to Address Radiation at HPNS



*Concrete, soil, and sediment at HPNS have been tested for radiation*



*Sanitary sewer and storm drain pipelines and trenches have been investigated for radiation*

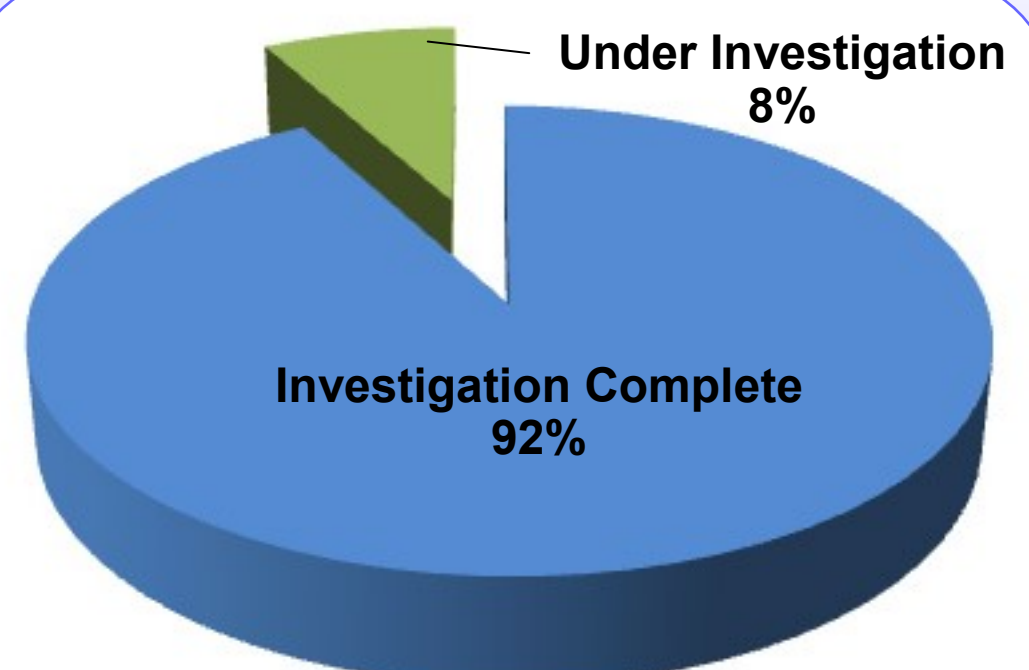


*Buildings have been scanned for radiation*

**A Historical Radiological Assessment (HRA)** was issued in 2004 and provides a thorough evaluation of historical radiological operations and activities at HPNS.

The HRA identified 91 sites/areas with potential radiological contamination. Some of the largest areas identified as being impacted with radiological materials include:

- ◆ Buildings associated with the NRDL activities or buildings associated with radium paint application
- ◆ Sanitary sewer and storm drain lines
- ◆ Former disposal or burial areas
- ◆ Piers or ship berths used after radiological testing



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# Radiological Data Review

## Background on Radiological Data Review at HPNS

In 2012, as a part of its regular review of contractor data, the Navy discovered one of its radiological soil sampling contractors, Tetra Tech EC, had misrepresented radiological soil samples. Tetra Tech EC claimed the soil samples had been taken after cleanup at HPNS. The Navy determined these soil samples were actually taken from areas that had been confirmed to be clean. Upon this discovery, the Nuclear Regulatory Commission (NRC) and the California Department of Public Health (CDPH) were notified and the Navy began an internal investigation. New data was collected from areas in question, and initial corrective actions were taken.

### Navy Takes Extensive Action Samples and Data Thoroughly Reviewed

- Reviewed more than 70,000 sample results
- Resampled building and land areas
- Completed additional soil excavations to clean up areas where misrepresented samples were taken
- Performed new radiological surveys with on-site independent supervision

### Two-Phase Radiological Data Analysis Underway

#### Phase 1: Gather Existing Data and Identify Potential Areas of Concern

- Develop database of available soil data
- Confirm accuracy of radiological data
- Identify questionable results which require further analysis
- Identify gaps in data for Phase II evaluation

#### Phase 2: Determine Priorities for New Field Sampling and Conduct Sampling

- Analyze questionable data identified in Phase I
- Identify where new samples may need to be taken
- Design sampling plan and conduct sampling
- Analyze new data and compare to results from existing data analyses

### Additional Claims Under Investigation

After initial investigations by the Navy and the NRC (prior to 2016), former Tetra Tech EC contractors who had worked at HPNS made additional claims about Tetra Tech EC sampling activities. The Navy is conducting a thorough investigation into all of the radiological data issues, as well as any additional claims made regarding Tetra Tech EC's radiological samples. All of the results will be made available to the public when the investigation is complete.

### Navy Confirms Accuracy of Radiological Data



Soil samples in question will be researched to ensure the integrity of each sample taken



New soil samples will be taken with on-site independent supervision



If necessary, additional cleanup, including additional soil removal, will ensure areas are free of radiological contamination



Buildings will be scanned for potential radiological contamination with on-site independent supervision

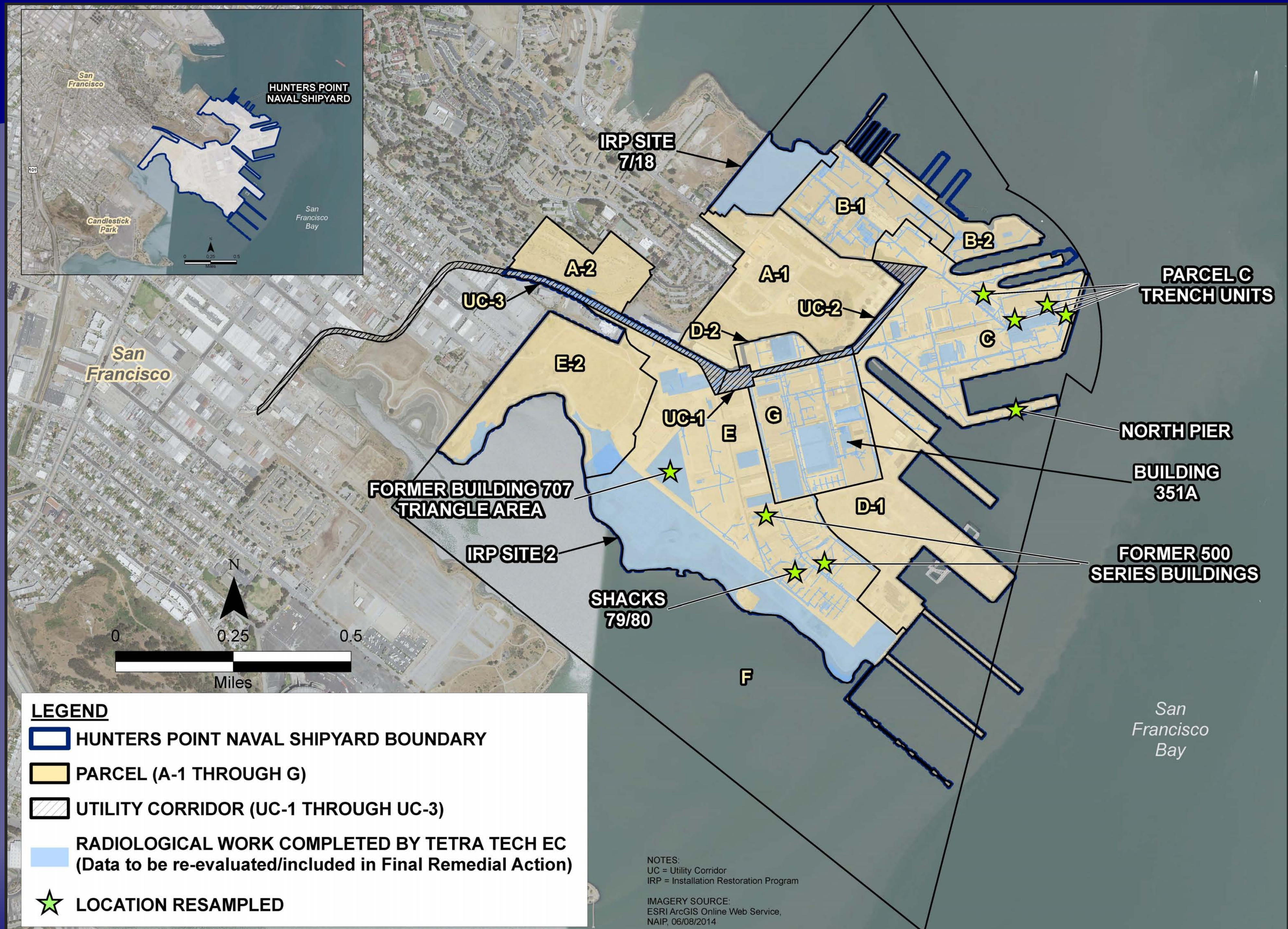


Public safety is the highest priority to the Navy. Investigations show that people who live, work, and visit HPNS and adjacent properties are safe.





## Radiological Data Sampling Locations







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## Protecting the Public

The Navy has several on-site controls and procedures in place at Hunters Point Naval Shipyard (HPNS) to ensure public safety.



### Establish Radiologically Controlled Areas

Public access to all work areas is restricted and only specially trained personnel are permitted to access radiological controlled work areas



### Use a Portal Monitor to Screen Trucks for Radiation

Trucks entering and leaving HPNS must pass through a portal monitor that screens for radiation



### Conduct Air Monitoring

The Navy monitors for both particulates and radiological contamination with on-site air monitors



### Implement Dust Control Measures

Dust is controlled to contain contamination within the restricted areas

### Comprehensive Evaluation

The Navy follows a carefully designed plan at HPNS to ensure timely and effective cleanup, with public safety as a priority. In addition to oversight by the United States (U.S.) Nuclear Regulatory Commission and the U.S. Environmental Protection Agency, the California Department of Public Health collects its own confirmation samples from radiological cleanup sites for independent verification.

Multiple agencies participate in the radiological investigations and remediation at HPNS.



*United States Navy  
Naval Facilities  
Engineering Command  
Base Realignment  
and Closure (BRAC)*



*United States Navy  
Naval Sea Systems Command  
Radiological Affairs Support Office  
(RASO)*



*United States Environmental  
Protection Agency (U.S. EPA)*



*United States Nuclear  
Regulatory Commission (U.S. NRC)*



*California Department of Public Health  
(CDPH)*



*California Department of Toxic  
Substances Control (DTSC)*





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# Living and Working at Hunters Point

## The Shipyard's History

The Hunters Point Naval Shipyard, or HPNS, is located on 934 acres of waterfront in the southeast corner of San Francisco.

### HPNS has an important role in U.S. military history

At the end of WWII through the mid-1970s, the Navy conducted ship repair and maintenance of Naval vessels at the shipyard dry docks. In addition to these activities, part of HPNS was used by the Naval Radiological Defense Laboratory (NRDL) to decontaminate ships exposed to atomic weapons testing and conduct research on the effects of radiation from 1948 to 1969. At various points in its history, the shipyard was also used by private companies for ship repair and maintenance.



Aircraft carriers in dry dock at HPNS, 1971

## Cleaning Up The Shipyard

In 1988, the shipyard was placed in the Base Realignment and Closure (BRAC) Program, a federal program created to oversee the cleanup and transfer of military installations to public or private entities for redevelopment.

### Investigations found contamination from historical activities

In 1989, the United States Environmental Protection Agency (U.S. EPA) evaluated HPNS and placed it on the Superfund National Priorities List in response to concerns about the effects of past hazardous wastes (such as oils and solvents) created by historical shipyard activities by both the Navy and private companies.

### Cleanup at HPNS continues today

The Navy is continuing its extensive investigation of contaminated areas of the base and cleaning up the land and groundwater where contamination is found, including radiological contamination. The Navy's cleanup program is tailored to meet the City of San Francisco's current Redevelopment Plan to ensure that people who live, work, and relax at The Shipyard are safe.

### Community safety is a priority

Throughout the cleanup process, the Navy, along with state and federal regulatory agencies, have worked together to prioritize efforts to ensure that the community is protected.

## The San Francisco Shipyard Today: Residents, Artists, and Visitors

*The Navy and regulatory agencies confirm that current and former Navy property occupied by residents, artists, and visitors is safe.*



### No contamination found on Parcel A

The first portion of the shipyard that was transferred, referred to as Parcel A, was used by the Navy as offices and housing areas.

### It is safe to live at The San Francisco Shipyard

The Navy's investigations showed that no cleanup was required in this area and Parcel A was transferred for redevelopment in 2004.

With regard to the radiological data investigations, the areas that are currently occupied by residents are not included in the data in the sampling misrepresentation.

Since the transfer of Parcel A, townhomes and condominiums have been built on the property, offering owners and residents new living space and marking a new chapter in the future for the shipyard.



Images of The San Francisco Shipyard at Parcel A  
[www.sfshipyard.com](http://www.sfshipyard.com)

### Existing buildings cleared for safety

Several existing buildings on the Shipyard have been investigated and approved as safe work spaces. In addition to evaluating for possible contamination, each building was tested to make sure that it is structurally safe. The areas that are currently occupied by artists and frequented by visitors are not included in the data sampling misrepresentation.

### It is safe to work in approved buildings

More than 250 artists have studios in buildings on HPNS, making it the largest group of independent studios in the United States. Led by the Shipyard Trust for the Arts (STAR) for over twenty years, tens of thousands of people have visited artists' open studios events at HPNS.

### Advancing the arts at HPNS

These artist studios create a place for working artists within the shipyard that will benefit future generations of artists, as well as the general public.



Images from Hunters Point Artists Open Studios events at HPNS  
[www.shipyardtrust.org](http://www.shipyardtrust.org)



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HPNS and adjacent properties are safe.